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MEASURING THE INCOMES OF FARM PEOPLE*

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We know something about the incomes of farm people--but not nearly enough. We know approximately what their total income has amounted to in any given year; and from the number of persons on farms, the number of farm workers, or the number of farm operators, we can compute simple arithmetic averages of their individual incomes. But we know very little about how the total income is distributed among farm families. We can also compare averages of farm income with corresponding averages of nonfarm income. But we are not sure just how "comparable" the figures really are.

This lack of detailed knowledge with respect to the distribution and comparative level of farm income arises in good part from the indirect methods that must be used in its estimation. Treating agriculture as though it were a single large firm, we estimate its gross income, its production expenses, and its net income from a wide variety of data on farm production, marketings, prices, and costs that have been collected primarily for other purposes. The method yields aggregates only, in terms of current values prevalent at the farm; and while the results are probably fairly reliable for what they purport to be, they are nevertheless inadequate for some purposes.

For the general purpose of indicating the comparative well-being of farm people, there are three major inadequacies: (1) Lack of State estimates of net farm income, (2) an absence of any satisfactory basis for comparison with nonfarm incomes, and (3) a dearth of acceptable data relating to size distributions. The method used in developing the national aggregates is also adaptable to State estimates; and a start has been made in their preparation. Thus, the only difficult problem in the case of State estimates is that of trying to do the job with insufficient resources.

In the areas of comparison and size distribution, however, some conceptual and statistical problems are as yet unresolved. It is the purpose of this paper to indicate something as to the nature of these problems and to provide a brief summary of the tentative results obtained in several recent attempts at their solution.

Problems of Comparison

In any attempt to compare the absolute levels of farm and nonfarm incomes in terms of data now available, three principal questions arise: (1) How complete are the respective totals in their coverage of income? (2) What is the difference in their purchasing power? and (3) What is the most satisfactory unit or basis for comparison?

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Completeness of coverage has to do chiefly with the fact that many people receive income from both farm and nonfarm sources, so that a simple average comparison of farm and nonfarm incomes may give distorted and misleading results. The problem may be handled by including all sources of income on both sides of the comparison, or by limiting the comparison to those groups that have but a single source of income. The latter course probably presents more statistical difficulties than does the former in the present state of our knowledge; and it is subject to further objection in that the scope of the comparison is defined in terms of the incomes to be compared.

Other factors to be considered under the heading of coverage are the intangible elements of income associated with the comparative advantages and disadvantages of farming as a way of life. Few would deny that farm life provides a psychic form of income that is not generally enjoyed by urban populations. Is this psychic income wholly or partially offset by economic disadvantages that are not reflected in our income data? The question is not amenable to statistical treatment; but it should not be forgotten in the final analysis.

The question of purchasing power has to do (1) with differences in the composition of commodities and services that go to make up comparable levels of economic well-being on the farm and in the city; and (2) with differences in the cost of similar items in the two situations. Paradoxically, the very fact of large differences increases the difficulty of measuring them accurately; and the basic index-number problem becomes especially acute in this case. The theoretical issues involved are well known, and need not be developed here; but the most important practical problem, namely the valuation of nonmoney income, deserves a brief mention.

With the possible exception of members of the armed forces, farmers are the only large group to receive a major portion of their income in kind. Farm-produced food and fuel wood consumed directly in farm households is ordinarily valued at cost in terms of prices actually received for the sale of similar products. And the occupancy value of farm dwellings, inseparable in the market from the rental or sale values of farms as a whole, is also imputed as something approaching opportunity cost. How are these items to be treated in measuring differences in purchasing power or "cost of living"?

One possible solution is to eliminate them completely from the monetary comparison. That is to say, income on both sides of the comparison could be defined as net money income after deducting all expenses for food, fuel, and housing. The comparison would then be in terms of income over and above that required for some of the basic necessities of life; and if desired, a supplementary comparison of the quantity and quality of the latter could be made in terms of physical instead of value units. 1/

1/ Some proposals of this general nature were tentatively suggested by Dorothy S. Brady in a paper presented at the 1949 meeting of the Conference on Research in Income and Wealth.

On the other hand, if these imputed, nonmoney items are retained in the monetary comparison, the cost-of-living analyst must answer some difficult questions. Retail prices of food normally average about twice as high as prices at the farm which are used in valuing home consumption. And the rental values assigned to farm dwellings have been only about a third as large, on the average, as rents on nonfarm dwelling units. How much of these spreads can be considered as representing real price differentials? And how much is due to differences in quality of the commodities and services being priced? The problem is particularly difficult in the case of rental values because housing available on the farm is frequently of an entirely different kind from that available in the city.

The third major question in any comparison of farm and nonfarm income is the appropriate basis for that comparison. That is to say, the aggregates of income, however adjusted, must be reduced to units of comparable size and quality. Should the comparison be in terms of income per person in the total population on the basis of farm or nonfarm residence? In terms of income per worker on the basis of occupation? Or in terms of income per family on the basis of either residence or occupation? Because of the relatively large numbers of children and older people on farms, the large proportion of unpaid family workers in the farm labor force, and the relatively large size of the average farm family, the choice among these or other alternatives obviously will have a material effect on the results to be obtained.

Another question in this connection is whether the comparison should be in terms of simple, Nation-wide averages of income, or whether farm and nonfarm incomes might better be compared within each region or State. The latter basis would give results somewhat more favorable than the former to the farm side of the comparison, because a large proportion of the farm population and only a relatively small part of the nonfarm population are in the South where incomes in general, both farm and nonfarm, tend to be lower than average.

It is no part of the purpose of this paper to try to provide any final answers. But it may be worth while to summarize briefly the results obtained in two recent and tentative studies which attacked these problems on a Nation-wide basis. 2/

In one case, 1941 data on prices paid for family living by farmers and by urban wage earners, obtained primarily from the study of "Family Spending and Saving in Wartime," were combined into weighted index numbers representing the average price differential between farm and city. The 1941 average net income per farm operator from farming was then adjusted downward to eliminate an estimated average value of unpaid family labor other than that of the operator; and the result was compared with the average annual earnings of factory workers in the light of the price differential previously established. The conclusion was that the purchasing power of farmers' incomes so adjusted averaged about 25 percent less in 1941 than that of urban factory workers. Similar calculations for

2/ One of these studies appears as "Farm and Urban Purchasing Power" by Nathan Koffsky in Volume Eleven of Studies in Income and Wealth, Conference on Research in Income and Wealth, National Bureau of Economic Research, New York, 1949, pp. 153-178. The other is summarized in the "Comment" of E. W. Grove appearing in the same volume, pp. 212-215.

1945 were also made in this study, using price data translated to reflect the wartime situation; and the results indicated approximate equality of purchasing power as between farm operators and factory wage earners in that year.

In the other study, a series of rather complicated adjustments were applied directly to the BAE data on per capita farm incomes to achieve rough purchasing power comparability with nonfarm per capita income. The results were then adjusted to allow for differences in the regional distribution of the farm and nonfarm populations and in the average size of the family in the two groups. It was concluded that, for the United States as a whole, real incomes of farm and nonfarm families in the same general locality averaged about equal in 1945, but that a disparity of at least 25 percent prevailed in most prewar years.

In neither of these studies was the comparison based on a functional analysis of income. Total incomes were compared, in other words, without any special attempt to distinguish returns from land, capital, labor, and management on either side of the comparison. In other respects, however, the two studies differed considerably in their approach to the problem. In one case, the labor income of the average factory worker was compared with the average farmers' composite returns on his capital, labor, and management, but exclusive of any income from nonfarm sources. In the other case, average total income of nonfarm families from all sources was compared with the corresponding average total income for families living on farms.

Because of these differences between the two studies in the basis for comparison, their respective conclusions are not strictly comparable. And both, it may be noted, were based on income data that have since been revised. Yet they tend to reinforce each other in pointing to the general conclusion that during the last 3 or 4 years farmers may reasonably be considered to have achieved something approaching income equality with the rest of the country.

But this "equality," if real, is only in terms of Nation-wide averages of income; and we are not yet able to say very much about income relationships in individual States. Such limited data as are available suggest that during the last few years farmers in certain parts of the Western and North Central regions of the country may actually have been a good deal better off than nonfarmers in those areas. And at the other end of the scale, particularly in certain parts of the South, it seems equally likely that farmers have remained at a substantial disadvantage even during the general farm prosperity of recent years. It is possible, therefore, that average equality for agriculture has been achieved in part at the expense of greater relative inequality <u>within</u> agriculture. But firm conclusions on this score are not possible in the present state of our knowledge.

Distribution by Size

Thus far we have been concerned with totals and averages of farm income, and with problems of comparison. But even if we had complete and up-to-date data of this kind, which could be interpreted precisely from a

comparative standpoint, the absence of size distributions of income would still prove to be a serious lack. The comparison of average incomes needs to be supplemented with information as to how many of who get how much.

Commonly cited in this connection are the Census of Agriculture distributions of farms by value of sales or by total value of product. These distributions are useful, but they are incomplete. We need distributions of farmers' net income as well as their gross income. And we also need to know how the distribution of farm families by size of net farm income is changed when income from nonfarm sources is taken into account.

The Bureau of Agricultural Economics has done a good deal of work along these lines in recent years. It has recently completed some preliminary estimates of size distributions relating to the income of farm-operator families in 1946. But this is another field in which it is difficult to obtain conclusive answers, and we are not yet ready to say that our results are the best that can be achieved. The preliminary findings were reported to the Conference on Research in Income and Wealth earlier this year, primarily for the purpose of obtaining a technical review of the statistical adjustments applied to the original survey data. As a result of this review, further investigations of the data and refinements of procedure are now in process; and the distributions may be materially revised in the near future.

Nevertheless, the results obtained so far seem fairly reasonable. And some of the main findings are not likely to be very much affected by any future revisions. So the following summary of methods and results can be presented with little fear of contradiction in the final analysis.

The distributions were based largely on data relating to farm income and expenses for the calendar year 1946, collected in the Enumerative Survey of Agriculture in January 1947. More than 14,000 usable schedules were obtained on gross cash farm income and about 3,700 usable schedules on production expenses. As in other recent income surveys conducted by other governmental agencies, the BAE survey was characterized by underenumeration of farms and underreporting of income. Underenumeration was not a serious difficulty because sufficient control data were obtained in the survey to permit expansion of the sample to the number of farms reported in the 1945 Census of Agriculture, using three major size-of-farm groups. It is to be noted that the underenumeration was largely in the smaller farms; this is primarily a reflection of the difficulty of identifying them as farms according to the Census definition.

The heart of the difficulty in constructing reliable size distributions of farmers' incomes lies in the severe underreporting of income which apparently is characteristic of farm income surveys. Receipts are generally understated, partly because of failure to remember the many transactions involved in the farm enterprise during the year, and also because of reluctance to disclose income data. These biases operate with greater force on the reporting of farm operators' income than on the reporting of income by most other occupational groups. Wage earners, for example, generally have fixed rates of earnings, easy to remember and report, and also relatively easy to check. In the companion survey of

nonfarm incomes in 1946, conducted by the Bureau of the Census, more than 90 percent of total urban wages and salaries was accounted for in contrast with only about half of total net cash farm income in the farm survey. Under such circumstances, the necessity of adjusting the original distributions is self-evident, especially when comparisons are sought between farm and nonfarm groups.

After expansion to the 1945 Census number of farms, the survey accounted for 72 percent of the aggregate BAE estimate of cash farm receipts, 91 percent of estimated total production expenses, and only 49 percent of net cash farm income. There was a fairly consistent pattern in the extent of underreporting by regions, implying that the sample was rather uniform in coverage for different parts of the country. It is noteworthy that the value of sales as reported in the 1945 Census of Agriculture represented an understatement from the Bae aggregate of approximately the same percentage as occurred in the 1946 survey. Furthermore, the Census distribution of the value of sales is quite similar to the distribution of gross cash farm income obtained from the survey, particularly when allowance is made for the generally higher level of income in 1946.

The BAE totals of gross income, production expenses, and net income are themselves subject to errors of estimation; and the question naturally arises as to the propriety of adjusting the income distributions to reflect aggregates which are not guaranteed to be correct. Yet the preponderance of evidence is on the side of adjustment. It is a characteristic of income surveys to underreport income, and the underreporting is usually greatest in the case of the self-employed, whether farm or nonfarm. In the 1946 surveys, nonfarm entrepreneurial income was underreported by about the same proportion as farm income. It should also be remembered that the Census of Agriculture is an income survey insofar as it relates to the value of sales or of total product; and as such it is subject to the limitations and biases of any income survey.

The relatively good reporting of farm production expenditures--91 percent of the estimated BAE aggregate--provided the opening step in adjusting the survey results. After raising all production expenses proportionately to reflect the BAE estimate, the corresponding gross cash farm income was determined by means of a relationship between gross cash income and production expenses at each income level determined largely from other sources. The survey covered the nonfarm income of farm-operator families, but excluded nonmoney income. By a series of cross-tabulations, however, and with the aid of data from other sources relating to the nonmoney income from farming, the following distributions were developed which reflected the BAE aggregate estimates: (1) Gross cash income from farming; (2) net cash income from farming, (3) net cash income from farm and nonfarm sources combined; and (4) net total income from farm and nonfarm sources, including nonmoney income from the farm.

In all cases, the distributions after adjustment are more unequal than before adjustment. This is because the available evidence indicated that most of the "missing" farm income belonged in the higher income groups, on the basis of the relationship between cash farm income and production expenses at those levels; and the adjustment was accomplished accordingly.

However, the greatest interest attaches to the lower income groups which were relatively little affected by the adjustment. In the distribution of gross cash farm income, the original survey indicated that 33 percent of all farms had gross cash incomes of less than $500. After adjustment, the percentage was lowered only slightly to 29 percent. For net cash farm income, the original distribution indicated 33 percent with negative incomes, and the adjusted distribution 30 percent.

At first glance, the indication that almost a third of all farms had negative net cash farm income in 1946--an unusually prosperous year for agriculture as a whole--may seem unreasonable. But after reference to the distribution of gross cash farm income, to the standard definition of a farm, and to the distribution of income from nonfarm sources, it begins to appear quite reasonable.

As already noted, nearly a third of all farms had gross cash farm incomes of less than $500, a proportion that is substantially confirmed by the value-of-sales data from the Census of Agriculture. Approximately two-thirds of all negative net incomes fall in this group with relatively low gross farm income. It should be emphasized that for the most part these farms are not commercial operations. Some are primarily country residences. Others, supplemented by income from nonfarm sources, provide living from the farm in noncash items. The tremendous importance of nonfarm income to this group may be illustrated by showing its average size at each level of net cash farm income. For those farm operators with negative cash income from farming, the average nonfarm income was about $1,900. At levels of net cash farm income above zero and ranging up to about $6,000, income from nonfarm sources becomes substantially smaller, averaging around $500 more or less at those levels. At still higher levels of farm income, nonfarm income again becomes increasingly larger in absolute terms, though it remains a relatively small part of total income at those higher levels. But the most significant point in all of this is that negative net cash farm incomes do not actually mean an excessively low level of total income for any substantial number of families who fall in that group.

Inventories are another matter worth mentioning in connection with negative cash farm incomes. One of the principal gaps in our data relates to the effect of changes in inventories on the distribution of income. The survey was confined to cash items, and did not obtain any information on inventories. But we know from a study of farm-account records in Illinois that some commercial farmers fall into the negative net cash farm income class because they are building up inventories. On the other hand, some farmers were in the higher cash income classes because they were selling out of inventories. Although no precise estimates can be made, the inclusion of farm inventory changes might have reduced considerably the number of farms in the negative income group.

For purposes of comparing the income distributions of farm and nonfarm families, it is appropriate to include for the farm-operator family all of the income it receives--cash farm income, income from nonfarm sources, and nonmoney income received from the farm in the form of food and shelter. It would also appear appropriate to value the

food consumed on farms at retail prices to farmers. If all this is done, then the shape of the income distribution for farm-operator families in 1946 turns out to be much the same as that for nonfarm families.

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It was concluded earlier in this paper that the over-all average incomes of farm and nonfarm families have probably had about the same real purchasing power during recent postwar years. And the further conclusion has now been reached that their incomes were probably distributed by size in somewhat the same fashion. But it does not necessarily follow from these two tentative and independent observations that the purchasing power of income was the same at each of the corresponding size classes in the two distributions. Much more detailed studies would be necessary to establish any such correspondence.

Three frontiers in farm-income research have been briefly considered here, namely the development of State totals, the comparison with nonfarm income, and the construction of size distributions. Some pioneer work has been done on all three. But so far the work on any one has been largely--and necessarily--independent of that on either of the other two. If and when the work shall have progressed to a point at which answers to all three can be combined, then, and not until then, will we really be able to measure the incomes of farm people.